APRIL 24, 1989
NARRATIVE FOR
A PORTION OF THE FORT PECK-WELDON
OIL AND GAS DEVELOPMENT POTENTIAL MAP

INTRODUCTION:

This narrative discusses a portion of the Big Dry Resource Area (BDRA) that is part of the Fort Peck/Weldon oil and gas development potential map. This area includes parts of Daniel, Garfield, McCone, and Prairie Counties. Also within this limit is the western segment of the Fort Peck Indian Reservation. Lands within this reservation are not discussed in this report.

Topography is open flat grasslands with the Missouri River bisecting the central portion of the area in an east-west direction.

Regional geology shows surface outcrops of Cretaceous and Tertiary rocks, with isolated deposits of recent to Miocene gravel (Ross, and others, 1955). The Pre-Cambrian basement regionally dips east to northeast and varies from 9,000 to 12,000 feet in depth. These rocks are overlain by almost a complete section of Paleozoic and Cretaceous rocks in excess of 5,000 feet thick (Mallory, 1972). Structurally, three major features are mapped across this area (Dobbin and Erdmann, 1955): 1) the western limit of the Williston Basin in the north; 2) the Wolf Creek anticlincal nose across the central portion of the area, and 3) the Blood Creek Syncline to the south. Minor structural features are also noted within these major structural trends.

There have been 83 wells drilled in this portion of the BDRA in the past 15 years. Fifty-three of them in producing fields or the adjacent townships. Currently, there are three state-spaced fields all located in T. 22 N., R. 46-47 E.; Weldon, Cow Creek, and East Cow Creek. The Prairie Elk Field located just north of Weldon is only a one well field and is currently not state-spaced.

The type log for the area is the Great Western 1 Bates in sec. 9, T. 24 N., R. 47 E. Drilled in 1981, this well reached a total depth of 9,422 feet in Cambrian Deadwood formation. Casing was set almost through the Mission Canyon for completion attempt. It was unsuccessful. Slight oil and gas shows were noted in the lower Charles.

OCCURRENCE POTENTIAL:

This portion of the BDRA is classified as high occurrence potential. This classification is based on: 1) a sedimentary package of Paleozoic and Cretaceous rocks in excess of 5,000 feet thick (Mallory, 1972), and that several formations within this package that are productive in this area and elsewhere in the state, and 2) a geologic setting with potential for structural and stratigraphic traps.

DEVELOPMENT POTENTIAL:

This portion of the BDRA has nine townships classified as high development potential. This is based on the established production and/or significant hydrocarbon shows from past drilling within those townships. Also, due to the geologic setting there exists possible structural and stratigraphic traps within those townships.

The remaining townships are classified as moderate development potential based on: 1) the presence of a thick sedimentary package that is productive within the are and elsewhere in the state, 2) the geologic setting, with possible structural and stratigraphic traps, and 3) lack of drilling data and established production.

The townships that contains the Weldon Field and Prairie Elk fields are moderate development potential, even though they have established production. This is because the fields are considered to be totally developed and are both producing more water than oil (Tonnsen, 1985).

Based on the geologic setting and the past activity, it is expected that this area will have a moderate level of surface disturbance due to drilling activity over the next 15 years.

REFERENCES CITED

Mallory, W. W., (ed.), 1972, Geologic atlas of the Rocky Mountain Region: Rocky Mountain Association of Geologists, p. 56.

Ross, C., Andrews, D., Witkind, I., (compilers), 1955, Geologic map of Montana: U.S. Geological Survey, map, 2 sheets, scale 1:500,000.

Tonnsen, J. J., (ed.), 1985, Montana Oil and Gas Symposium,: Montana Geological Society, Billings, Montana, p. 1163.